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OF INTEREST TO TEACHERS

FORESTRY IN THE HIGH SCHOOL

Mr. E. A. Sanders of Dayton, Ohio, gave last May, in the *Nature Study Review*, an outline of the forestry work done in the Steele High School under his direction. The aim was to make the work practical, and to acquaint the boys with a new and uncrowded profession. To quote from the author the results "fully justified the experiment and demonstrated the value of the work.

"The class included boys from both city and country, the studious type and the careless athletic-loving type, all of whom with one exception were deeply interested and thoro-going in their work. Two of the boys are definitely looking forward to forestry as a profession and all have shown an awakened interest in the conservation of our forests and waterways.

"The work usually consisted of two lectures, two field trips and one written or oral test per week. Laboratory work on wood structure and physical properties was introduced after Christmas and symposium reports on assigned topics occupied some attention. Lecture, laboratory and test periods were of 45 minutes each and field trips after school of two to three hours. The greatest defects were, lack of complete organization of the course and inability of all students to be present at all field trips."

The syllabus which is reprinted below seems very comprehensive for high school work. Many normal and college students do not learn to know seventy trees. The number of government circulars and bulletins used as references is suggestive. The Forest Service has for sale a large number of photographs illustrating various phases of forestry.

SYLLABUS OF FORESTRY COURSE

- A. Identification of trees (70 species).....4 weeks
 Field and lecture work. Leaf keys and collections.
 References. — Kellerman, Appgar, Hough.
- B. Identification of woody vines and shrubs. 1 week
 A study of undergrowth and forest cover.
 References. — Schaffner, Keeler.
- C. Forest Ecology 4 weeks
 A study of collections of trees. Effect of environment on forest types. Type maps, Plant societies.

- References. — Graves, Schimfer, Schenk.
- D. History of Forestry..... 1 week
Lectures on European and American forestry.
References. — Graves, Cir. 140, Forest Service U. S. A.
- E. Silviculture..... 3 weeks
Establishment and care of forests. Tree planting and regeneration; enemies of forests. Working plans.
References. — Schenk.
- F. Mensuration..... 3 weeks
Calculation of stands and values. Facing, mapping, surveying, estimating. Field work. Maps.
References. — Bulletins 20 and 36. Forest Service, U. S. A.
- G. Lumbering..... 2 weeks
History and present supplies. Conservation, forestry methods. Visits to mills. Identification of woods. Bulletin 34.
- H. Laboratory Work..... 2 weeks
Microscopic structure and physical properties. Bulletin 10.
(Each student presents a thoro investigation of one tree as a thesis.)

Many teachers of botany will be interested in the new rules of the Carnegie Foundation for the Advancement of Teaching which make instructors (as well as professors) in accepted institutions eligible for the generous pensions provided by that fund.

In *Conservation* for December are several articles of interest to botanists. The two longest ones, which are fully illustrated, deal with forestry in Japan and the relation of the South to conservation in the conservation projects in the Appalachian Mountains.

The last Forest Service report states that the states leading in the production of last year's lumber supply of over \$500,000,000 are (in the order named): Washington, Louisiana, Mississippi, Arkansas, Wisconsin, Texas, Michigan, Oregon, Minnesota, and Pennsylvania. The rank of Louisiana and Texas may be somewhat surprising. Yellow pine from the southern states leads the list, over 33 per cent. of all lumber cut; Douglas fir of the north-western states was second; and white pine, third.

Articles of interest in the November issue of the *Popular Science Monthly* are the World of Life as Visualized and Interpreted by Darwinism, an abstract of a lecture delivered by Alfred Russel

Wallace; Desert Scenes in Zacatecas, an illustrated paper by Professor J. E. Kirkwood describing the 400,000 square miles of country south of the Rio Grande; and a continued paper on The Argument for Organic Evolution before "The Origin of Species," by Professor Arthur O. Lovejoy.

Mention has not been previously made of the description of a simple chemical device illustrating Mendelian inheritance, which was printed in the *Plant World* for July, 1909. A litmus solution, sodium hydroxide or aqua ammonia, and hydrochloric acid are used to illustrate: "the more common type of Mendelian inheritance, that in which presence is dominant over absence"; "the dominance of absence over presence"; and "the equivalence of reciprocal crosses, regardless of the fact that egg and sperm differ much in size."

The September *Popular Science Monthly* includes a short article by Luther Burbank on Another Mode of Species Formation. In this article Mr. Burbank calls attention to the fact that those who formerly practised crossing to secure a mongrel which might or might not surpass its parents did not realize that "*crossing was only the first step and that selection from the numerous variations secured in the second and a few succeeding generations was the real work of the new plant creation*" work. Mr. Burbank gives an interesting list of hybrids, some formed under cultivation, and some found in a wild state, which come true to seed.

A gigantic irrigation scheme is being planned for the rehabilitation of Mesopotamia upon such a scale that 3,000,000 acres of the best land in that country will be provided with water. The plans consist of providing a means of escape for the flood waters of the Euphrates; and the Tigris, the Euphrates, and the Akkar Kuf Lake will form part of a controlled system of canals whereby the pernicious silt is to be separated, floods are to be prevented, and wheat-bearing land is to be supplied with water. It is estimated that the cultivated area will be doubled, the crop of wheat

along the Euphrates being trebbled. The scheme would also mean a vast increase in the yield of cotton.

The *Outlook* for December 4 contains an article by Gifford Pinchot entitled "The A, B, C of Conservation" in which he answers six questions asked by the *Outlook*: What does Conservation stand for? What has Conservation to do with the welfare of the average man to-day? What is the danger to the Conservation policies in the coming session of Congress? Why is it important to protect the water powers? How must it be done? Does the same principle apply to navigable streams as to non-navigable?

The first answer includes such telling phrases as "to make this country the best place to live in, both for us and our descendants"; "equal opportunity for every American citizen to get his fair share of benefit from these resources, both now and hereafter"; "the same kind of practical common-sense management" that "every business man stands for in the management of his own business." To the second, Mr. Pinchot answers, "Conservation holds that it is about as important to see that the people in general get the benefit of our natural resources as to see that there shall be natural resources left." The danger suggested in the third is that "Congress must decide at this session whether the great coal-fields still in public ownership shall remain so, in order that their use may be controlled with due regard to the interest of the consumer, or whether they shall pass into private ownership and be controlled in the monopolistic interest of a few.

Congress must decide also whether immensely valuable rights to the use of water power shall be given away to special interests in perpetuity and without compensation, instead of being held and controlled by the public."

In the answer to the fourth, we find "the greatest source of power we know is falling water. Furthermore, it is the only great unfailing source of power. Our coal, the experts say, is likely to be exhausted during the next century, our natural gas and oil in this. Our rivers, if the forests on the watersheds are properly handled, will never cease to deliver power."

Two measures are advocated in answer to the fifth question. "First, the granting of water powers forever, either on non-navigable or navigable streams, must absolutely stop. It is perfectly clear that one hundred, fifty, or even twenty-five years ago our present industrial conditions and industrial needs were completely beyond the imagination of the wisest of our proceedings. It is just as true that we cannot imagine or foresee the industrial conditions and needs of the future." Water powers "must and should be developed mainly by private capital, and they must be developed under conditions which make investment in them profitable and safe. But neither profit nor safety require perpetual rights."

Second, "the men to whom the people grant the right to use water power should pay for what they get."

To the sixth Mr. Pinchot answers by showing that the power to be gained from navigable streams differs only in that it is secured from a larger volume of water dropping a shorter distance, and that since "every stream is a unit from its source to its mouth it is just as essential that the people should "retain and exercise control of water power monopoly on navigable as on non-navigable streams."

These answers show that Mr. Pinchot advocates a policy "thoroughly democratic in its essence and tendencies," and emphasizes his feeling that the people have the right and the duty, the duty no less than the right, to protect themselves against the uncontrolled monopoly of the sources which yield the necessities of life.

NEWS ITEMS

At the University of Maine, Professor H. G. Bell, of the Iowa State College, has been elected professor of agronomy.

Following the resignation of Professor Henry S. Graves, Professor J. W. Toumey has been appointed acting director of the Yale Forestry School.

Mr. Darius Ogden Mills, of New York City, died recently in California; among his public bequests is a gift of fifty thousand dollars to the New York Botanical Garden.